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**From:** Fennessy, Christopher [christopher.fennessy@Rocket.com]  
**Sent:** 3/19/2018 9:13:42 PM  
**To:** MacNicholl, Peter@DTSC [Peter.MacNicholl@dtsc.ca.gov]  
**CC:** Keller, Lynn [Keller.Lynn@epa.gov]; MacDonald, Alex@Waterboards [Alex.MacDonald@waterboards.ca.gov]  
**Subject:** RE: [EXTERNAL] FW: Aerojet A40 FS Cost Estimate review by ESPO

Hi Peter – Can you please forward the following responses to ESU? If additional comments remain, we would be happy to have a call to resolve. Thanks, Chris

**Christopher M. Fennessy, P.E.**  
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**From:** MacNicholl, Peter@DTSC [mailto:Peter.MacNicholl@dtsc.ca.gov]  
**Sent:** Monday, March 19, 2018 10:08 AM  
**To:** Fennessy, Christopher  
**Cc:** Keller, Lynn (Keller.Lynn@epa.gov); MacDonald, Alex@Waterboards  
**Subject:** [EXTERNAL] FW: Aerojet A40 FS Cost Estimate review by ESPO

Hi Chris,

These below comments are from DTSC's ESU Unit. These items should be addressed with responses from AR. These additional comments on the cost estimates will be included in DTSC's FS comments/concurrence letter. These comments from ESU were due prior to my vacation but didn't receive till after I left so I apologize for the late submittal.

Sincerely,

-Pete

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**From:** Myers, Perry@DTSC  
**Sent:** Tuesday, March 06, 2018 11:30 AM  
**To:** MacNicholl, Peter@DTSC <[Peter.MacNicholl@dtsc.ca.gov](mailto:Peter.MacNicholl@dtsc.ca.gov)>  
**Subject:** Aerojet A40 FS Cost Estimate review by ESPO

Hi Pete,  
I completed the review of the cost estimates included in the November 2017 version of the Feasibility Study for Area 40 of the Aerojet site as requested.

I found some issues related to the volumes of soil excavated vs. that backfilled or disposed of that have the potential to underestimate costs by 30% or more, specifically:

- Scenario "A" – Soil Excavation and Disposal Perchlorate Sources to Groundwater includes;
  - Excavation of 33,106 tons

- Backfill of 20,496 tons
- Disposal of 20,496 tons

The total tonnage of soils designated as “perchlorate” in table 4-2 sums to 30,900 tons. Adding a 10% factor for uncertainty would be close to the value of 33,106 tons used for the excavated volume. If the amount of perchlorate contaminated soil that will be excavated and disposed of should be 33,106 then then this section of the cost estimate is low by approximately +40% due to underestimating the costs for disposal of contaminated soil, clean backfill, and transportation of each of these. Only 14,640bcy of soil is contaminated. Due to the need to slope the sides of the excavation to reach the contaminated soil at 12 feet bgs, we will be excavating a total of 23,647bcy of soil. The difference between these two, 9,007bcy of soil, is uncontaminated and will be placed back in the excavation and not hauled for disposal. This is documented in the first table of Appendix C. It shows that there are 14,640bcy of contaminated soil and 9,007bcy of uncontaminated soil that will be excavated. Adding these numbers together and multiplying by a factor of 1.4tons/bcy, you get 33,106 tons of soil excavated. The costs for this are detailed in the Appendix C table titled “Soil Excavation and Disposal Perchlorate Source to Groundwater – 9 Locations (“A” scenario) (Page 4 of 8). I will research the discrepancy between Table 4-2 (30,900 tons) and Appendix C (33,106 tons) and correct for the final version.

- Scenario “B” – Soil Excavation and Disposal Perchlorate Sources to Groundwater includes;
  - Excavating and backfilling 33,106 tons of soil
  - Treating 14,640 bcy of contaminated soil in an onsite biocell at an all-inclusive cost of \$199.18/bcy

This is similar to the issue with Scenario “A”, the volume of contaminated soil excavated is over two times that sent for treatment, which has to the potential to underestimate the costs for this scenario by over 30%. Similar to Scenario A, only 14,640 bcy of soil is contaminated. Due to the need to slope the sides of the excavation to reach the contaminated soil at 12 feet bgs, we will be excavating a lot of uncontaminated soil. This uncontaminated soil will be placed back in the excavation and not hauled for treatment.

- RO 8b and c) North – Soil Excavation and Disposal (37B-S-RA1). In RO 8b the volume of contaminated soil for disposal and backfilling matches what is listed in Table 4-2 but the volume to be excavated is 2.4X and 8c is similar with the excavated volume 1.6X, which has the potential to overestimate the cost of these ROs. While this is not an issue of great concern it is part of the soil volume discrepancy trend. Similar to Scenario A, Table 4-2 only lists the contaminated volumes. In order to excavate those contaminated soils, side slopes will be required. These side slopes are assumed to be uncontaminated soil and do not require transportation or disposal. This uncontaminated soil will be placed back in the excavation. Therefore, there is a difference between the volume of soil excavated and the volume of soil transported and disposed.

It would be a good to ask for clarification on why the excavated volumes differ from the backfill volumes and the disposal volumes before making formal deficiency comments on the cost estimates.

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